Eminent scientist warns of global contamination risks

26 February 2013

(Phys.org)—Eighty-three thousand man-made chemicals now circulate freely around the Earth, in water, soil, air, wildlife, food and manufactured goods and people, posing unquantified but genuine hazards to human and environmental health.

The warning comes from one of Australia's most distinguished soil scientists, Professor Ravi Naidu, of the University of South Australia and the CRC for Contamination Assessment and Remediation of the Environment (CRC CARE) who today announced Australia is prepared to take a world lead in investigating earth system contamination.

Professor Naidu has just returned from the US where he was admitted as a Fellow of the American Association for the Advancement of Science (AAAS) for 'efforts on behalf of the advancement of science or its applications (which) are scientifically or socially distinguished'. Three months ago he was awarded the Soil Science Society of America's prestigious 2012 International Soil Science Award.

"When people think of the impact of human activity on global systems, they tend to think mainly of greenhouse gases, urban air pollution or nutrient pollution of waterbodies – but in fact there is a far wider array of toxic substances now in the Earth system circulation.

"Individually, and as chemical mixtures, these pose real risks to human health. Current studies, such as those by America's Centers for Disease Control, have shown that most humans are now, to some degree, contaminated by industrial chemicals.

"And research in the US, Europe and China is finding many babies are now born contaminated, while mothers are unknowingly passing man-made carcinogens and other toxins to their babies in maternal milk."

Professor Naidu says that the universal nature of chemical contamination of the Earth system is only just starting to be appreciated by science – and is still an issue largely unfamiliar to society.

"Wherever we look, from the deep oceans and remotest islands, to the peaks of the highest mountains, to the snows of Antarctica, to the stratosphere, we find traces of man-made chemicals, many of them linked to or suspected of causing cancers and other diseases.

"The water beneath most of our great cities is so contaminated it is often undrinkable. Pesticides and 'gender-bender' compounds are now quite commonly found in the food chain and public water supplies. There is rising awareness of the global distribution of nanomaterials in the environment – and a major scientific effort will be needed to understand and monitor this development worldwide.

"And while we have some idea of how some individual chemicals affect our health, most of them are unknown and have never been tested – including the many new ones which are released on world markets each year. Above all, there is little scientific understanding of the impact of chemical mixtures on human or environmental health, which remains a serious gap in our knowledge."

Prof. Naidu says that Australia is preparing to take a world lead in addressing the issue of Earth system contamination when it proposes a Global Contamination Research Initiative (GCRI) to investigate it, at a major international conference hosted by CRC CARE in Melbourne in September.

"The first step in protecting our own health and that of all living species, is to understand what is really going on globally – and to do that we need a worldwide team of the best scientists in the field. The GCRI is envisioned as a global scientific partnership that will bring an international focus to

an issue which affects all people, everywhere, but has largely gone under the radar."

And while advanced countries had quite effective anti-pollution laws, this was not the case globally, especially in developing countries where the world chemical industry is now relocating.

"This means that chemicals released in poorly-regulated places can still come back to affect the lives and health of people in well-regulated countries – in water, air, food and other products.

"For example Chinese studies have shown how toxic electronic waste, generated in Europe or US, can travel to China for unregulated reprocessing, then go back again to reach consumers in Europe in foods produced with contaminated soil or water, all in a matter of months.

"We need to be aware it is not just the pollution in our own back yard that is a problem – but that this is a global challenge, and potentially affects everyone, everywhere. Yet the knowledge and global institutions to prevent it mostly do not yet exist."

Prof Naidu says that anyone wishing a better understanding of global contamination and related issues can read the United Nations Environment program's 2012 Chemical Outlook report at www.unep.org/pdf/GCO_Synthesis%20Report_CBDTIE_UNEP_September5_2012.pdf

The Global Contamination Research Initiative proposal will be discussed by Australian and international scientific and industry leaders at CleanUp 2013, In Melbourne, from September 15-18. See: www.cleanupconference.com/index.html

Provided by CRC for Contamination Assessment and Remediation of Environment